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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/090,371

03/04/2002

Dawei Huang

HUANG 2-1 (58655)

5175

46290

7590

07/07/2006

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EXAMINER

TORRES, JOSEPH D

ART UNIT

PAPER NUMBER

2133

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/090,371	Applicant(s) HUANG ET AL.	
	Examiner Joseph D. Torres	Art Unit 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-11,13-18 and 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17,18 and 20-22 is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,8-11,13,15 and 16 is/are rejected.
- 7) ☒ Claim(s) 6,7 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1, 2, 4-11 and 13-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, "the known symbols being inserted with a periodicity **determined by** a constraint length of an encoder" [Emphasis Added]. The Examiner asserts that the term "determined by" is indefinite and does not set forth the relationship between the periodicity of the symbols and the constraint length of an encoder. If the constraint length of an encoder is K, the periodicity is defined as $p=f(K)$, then the periodicity is substantially unconstrained to be any value under the sun (Note: the term "determined by" is even broader than any functional relationship and is substantially equivalent to saying that the periodicity can be any value). By way of example, $p=K+t$ for any number t is a periodicity determined by constraint length K and p can take on any value.

The term "determined by" in claim 1 is a relative term which renders the claim indefinite. The term "determined by" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The phrase "the known

Art Unit: 2133

symbols being inserted with a periodicity **determined by** a constraint length of an encoder” does not set forth any relationship between periodicity and constraint length to ascertain what values of periodicity are valid.

For now the Examiner assumes that the Applicant is attempting to claim an arbitrary periodicity for inserting symbols.

Claim 10 recites similar language as in claim 1. Note: Claim 17 recites, “wherein m corresponds to a memory length, such that the known symbols are inserted after each k-1 information bit”, which clarifies the phrase, “periodicity **determined by** a constraint length” in claim 17.

Response to Arguments

2. Applicant's arguments filed 04/25/2006 have been fully considered but they are not persuasive.

The Applicant contends, “However, simply inserting zero bits in an alternating manner, as described in Simanapalli, is not equivalent to inserting bits into a digital data sequence with a periodicity determined by a constraint length of an encoder”.

The Examiner disagrees and asserts that the term “determined by” is indefinite and does not set forth the relationship between the periodicity of the symbols and the constraint length of an encoder. If the constraint length of an encoder is K, the periodicity is defined as $p=f(K)$, then the periodicity is substantially unconstrained to be

any value under the sun (Note: the term “determined by” is even broader than any functional relationship and is substantially equivalent to saying that the periodicity can be any value). By way of example, $p=K+t$ for any number t is a periodicity determined by constraint length K and p can take on any value. Hence inserting zero bits in an alternating manner is entirely equivalent to inserting bits into a digital data sequence with a periodicity determined by a constraint length of an encoder since either way the periodicity can take on any arbitrary value.

The Applicant contends, “Simanapalli appears to teach away from inserting bits into a digital data sequence with a periodicity determined by a constraint length of an encoder. In particular, Simanapalli describes interleaving zero bits with input frame bits in an alternating manner, e.g., inserting a zero bit after every input bit. However, the convolutional encoder described in Simanapalli appears to have a constraint length of six”.

The Examiner disagrees and asserts that if K is the constraint length of an encoder and if $t=4$, then an arbitrary functional $p=f(K)=K-t$ relationship can be created whereby the periodicity $2=p=f(K)=K-t=6-4$. As pointed out above, “a periodicity determined by a constraint length of an encoder” is entirely equivalent to an arbitrary periodicity since a periodicity determined by a constraint length of an encoder can take on any value under the sun.

Art Unit: 2133

The Applicant contends, "Kato teaches that fixed bits are inserted in a data stream to reduce a residual bit error ratio for the same line bit control ratio, whereas the present invention teaches periodically inserting known symbols to reduce the line bit error ratio." In response to applicant's argument that "inserting known symbols to reduce the line bit error ratio", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

The Examiner disagrees with the applicant and maintains all rejections of claims 1, 2, 4-11, 13-18 and 20-22. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that claims 1, 2, 4-11, 13-18 and 20-22 are not patentably distinct or non-obvious over the prior art of record in view of the references, Simanapalli; Sivanand (US 6081921 A) in view of Kato; Osamu et al. (US 5436918 A, hereafter referred to as Kato) as applied in the last office action, filed 03/16/2006. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2133

3. Claims 1, 2, 4, 5, 10, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Simanapalli; Sivanand (US 6081921 A).

See the Final Action filed 03/16/2006 for detailed action of prior rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 8, 9, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simanapalli; Sivanand (US 6081921 A) in view of Kato; Osamu et al. (US 5436918 A, hereafter referred to as Kato).

See the Final Action filed 03/16/2006 for detailed action of prior rejections.

Allowable Subject Matter

5. Claims 17, 18 and 20-22 are allowed.

Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

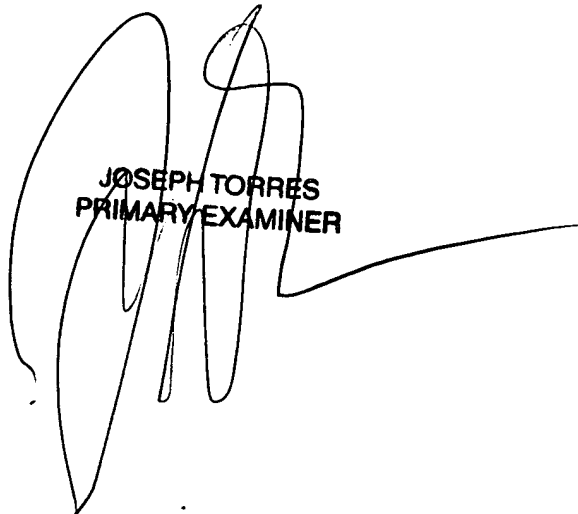
Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2133

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JOSEPH TORRES
PRIMARY EXAMINER

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133